

## ORIGINAL ARTICLE

# Knowledge of glaucoma amongst undergraduate students of University of Calabar, Nigeria

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Globally, glaucoma is the leading cause of irreversible blindness and the common type is asymptomatic until later stages. Knowledge about the disease is known to influence utilization of eye screening services. A cross-sectional study was carried out to determine the level of glaucoma knowledge among undergraduates of University of Calabar, Cross River state, Nigeria. Four hundred (400) respondents were involved. The instrument for data collection was a questionnaire and data were analyzed using Microsoft Excel 2016 and Statistical Package for Social Sciences (SPSS) version 20. The results showed that 66.25% of the respondents had heard of glaucoma, 45% of them had poor knowledge of glaucoma, and only 29.6% had good knowledge. Common sources of information about glaucoma were from health care personnel (22.8%), mass media (16.8%) and from relations and friends (13%). Age and gender of participants were not statistically significant when compared to their knowledge level of glaucoma ( $p=0.651$  and  $p=0.967$  respectively). However, there was a statistical significant relationship between knowledge score and faculty of study of undergraduates ( $p=0.002$ ). With the poor knowledge of glaucoma among undergraduates, the study recommends a stronger collaborative effort in providing quality glaucoma education by all eye care stakeholders at all levels.

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**Key words:** Glaucoma, Knowledge, irreversible blindness, asymptomatic, Cross River state, Nigeria

### INTRODUCTION

Glaucoma is sometimes called the “silent thief of sight” because it slowly damages the eyes and can cause irreparable harm before there is any vision loss. This disease is stealthy in more ways than one. Glaucoma has been known since antiquity, and yet researchers today still do not know what causes it in most cases. There are treatments to delay vision loss, but no cure, making it a leading cause of blindness all over the world (Wiggs and Weinreb, 2014).

Glaucoma is a major public health problem and is one of the leading causes of blindness worldwide. Although the number of the people affected by primary open angle glaucoma varies in different

reports, it is estimated that there will be 60.5 million people with glaucoma worldwide by 2010 increasing to 79.6 million people in 2020 (Quigley and Broman 2006).

The importance of early diagnosis in glaucoma cannot be underestimated for its effective management and prevention of blindness. Early detection of glaucoma is often difficult due to its asymptomatic course in the initial stages, and also the lack of a viable screening tool compounds the problem. According to Parveen and Mukesh (2014), 50-90% of the glaucoma cases remain undiagnosed and a large number of cases are diagnosed at a later stage of the disease. Lack of awareness about glaucoma is an important reason for its late presentation and this significantly increases the risk of blindness.

Halting the progression of glaucoma is possible with treatment but the condition will remain a

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## Undergraduates knowledge levels of glaucoma

Pius *et al.*,

“silent thief of sight” in West Africa unless awareness, uptake of services and adherence to treatment improve. Understanding how glaucoma is locally conceptualized, lived with and responded to by patients is essential to aid the design of interventions to prevent glaucoma blindness in Africa (Abdul *et al.*, 2016).

Poor glaucoma awareness may adversely influence eagerness to undergo regular eye sight tests. One way to prevent late presentation would be to provide members of the public with information on the importance of early detection and treatment. Early detection is essential to stop the progress of the disease. An individual’s risk of vision loss could be reduced if those at risk of blinding eye disease obtain a comprehensive eye test on a regular basis (Baker and Murdoch, 2008). Lack of awareness about glaucoma is an important reason for its late presentation, which significantly increases the risk of blindness (Parveen, *et al.*, 2014).

The World Health Organization (WHO) launched Vision 2020: The Right to Sight in 1999. This is an initiative to eliminate the global avoidable blindness from cataract, trachoma, onchocerciasis, refractive error, vitamin A deficiency, and other causes of blindness by the year 2020. The initiative was also aimed at reducing the global burden of blindness from 75 million to 25 million people by 2020. (Muhammad and Adamu, 2014; WHO ?).

It is in the light of this vision that we seek to know the level of awareness that exists in the community of undergraduate students and their knowledge of this blindness disease, glaucoma. Background research data on what the healthcare consumer thinks, knows, and does about a particular health concern are essential ingredients for the development of effective health education strategies.

## MATERIALS AND METHODS

### Study design

The research design was a cross-sectional descriptive study using the quantitative approach to describe and better understand the level of knowledge of glaucoma amongst undergraduate students of the

University of Calabar, Calabar, Nigeria. University of Calabar is a public tertiary institution located in the south-south region of Nigeria.

### Sample size determination and sampling procedure

The sample size of respondents used in the research was obtained using the formula

$$n = Z^2pq/d^2 \text{ (Kish, 1965).}$$

Where:

$n$  = Desired sample size

$Z$  = The alpha level of confidence interval at 95%  
= 1.96

$p$  = The proportion in the target population estimated to have good knowledge about glaucoma. This was estimated to be 36.8% based on a similar study carried out in urban settlement Enugu metropolis, Nigeria.  $p = 0.37$  (Kizor-Akaraiwe, Monye, & Okeke, 2017),

$q$  = Probability of the event not occurring i.e.  
 $(1 - p) = 0.63$

$d$  = Precision required (5%) = 0.05

Substituting in the above formula

$$n = \frac{1.96^2 \times 0.37 \times 0.63}{0.05^2}$$

$$n = 358.19 = 358$$

To account for a 10 percent non-response rate, the sample size increase to 394, this was rounded up to 400.

A multistage sampling technique was used to select the respondents who were level 300 undergraduate students of the University of Calabar. This was because most level 300 students have their permanent lecture rooms where they can be located. Also at that level, the students seem more matured and knowledgeable in their field of study and other topical issues. Another reason was to achieve uniformity. There are 10 Faculties in University of Calabar at the time of the study. Five faculties were randomly selected by a simple random sampling technique. A list of all faculties formed the sample frame from which five faculties

were randomly selected for the study. The number of respondents for each faculty was obtained using a proportionate sampling method. At this stage, a comprehensive list of the numerical strength of all undergraduate students in each department/faculty of the university was obtained from the Academic Planning Department of the university. The proportional value of each faculty was calculated and multiplied by our sample size (400) to get the exact number of samples needed for each of the selected faculty. Respondents in level 300 from the five selected Faculties [Social sciences, Allied Medical Sciences, Medicine and Surgery, Basic Medical Sciences and Law (Table 1) were then conveniently sampled and recruited into the research.

A pre-tested semi-structured self-administered questionnaire was used for data collection. Verbal informed consent was obtained from all respondents before data collection. Ethical approval was obtained from the Cross River State Research Ethics Committee, Ministry of Health. All information about the respondents was handled with utmost confidentiality, in line the Hensinki declaration.

**Data analysis**

Data generated was analyzed with Microsoft Excel 2010 and Statistical Package for Social Sciences (SPSS) software Version 20.0. Frequency distribution of variables, percentages, graphical representations, charts and tables for simple descriptive statistics were done. The associations between variables were tested using the Pearson chi-square test. Scores were graded to provide levels of glaucoma knowledge amongst the undergraduates of University of Calabar.

**RESULTS**

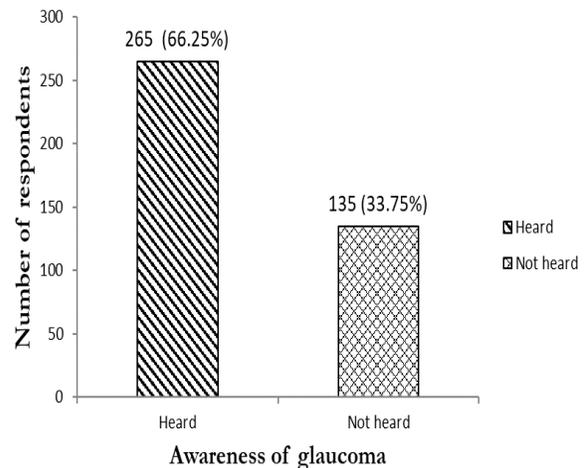
**Socio-demographic profile of respondents**

A total of four hundred (400) questionnaires were administered and retrieved; of these, 56.5% (226) of the respondents were females. The age range of respondents in this study was 15-54 years and the mean age was 23.14 ±4.473. The majority of the respondents 272 (68.00 %) were in the age group of 15 - 24 years. The median age was 23 years. The scores were classified into three levels. Respondents

**Table 1: Demographics of respondents**

Variables	Frequency (n=400(%))
<b>Age group</b>	
15-24	272(68.0)
25-34	120(30.0)
35-44	5(1.3)
45-54	3(0.8)
<b>Gender</b>	
Male	174(43.5)
Female	226(56.5)
<b>Faculty</b>	
Social sciences	134(33.5)
Allied medical sciences	96(24.0)
Basic medical sciences	70(17.5)
Medicine and surgery	53(13.3)
Law	47(11.7)

**Data presented as frequency (n) and percent**



**Figure 1: Awareness of glaucoma among University of Calabar students**

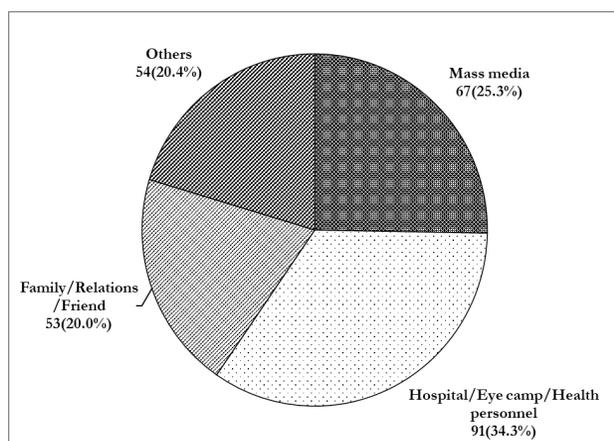
who scored between zero to three were classified as having poor knowledge of Glaucoma. Those who scored four to six where classified as having moderate knowledge while seven to ten were classified as having good glaucoma knowledge.

**Awareness of glaucoma among undergraduates**

A majority of the respondents (265, 66.25%) reported to have heard of glaucoma; most of them were females (151, 57%) (Figure 1). Sixty-seven (67, 16.8%) of the respondents learnt about glaucoma through the mass media, 91 (22.8) through hospital

## Undergraduates knowledge levels of glaucoma

Pius *et al.*,



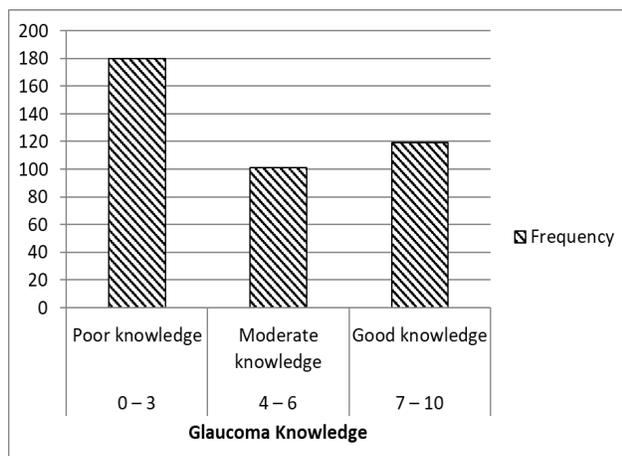
**Figure 2: Sources of information on glaucoma amongst undergraduate students**

and/or health personnel and 53 (13.3%) through a family member and/or from friends (Figure 2).

### Knowledge level of undergraduate students on glaucoma

Answers to the 10 multiple choice questions were scored and analyzed in frequencies and percentages. (Table 2). Only 29.6% (119) of respondents had good knowledge of glaucoma. (Figure 3). However, a good number of respondents (68%) knew that glaucoma runs in families (Table 2).

Although, a majority of the respondents who had good knowledge of glaucoma were in the age range of 15 -24 years, that difference was not statistically



**Figure 3: Levels of Glaucoma Knowledge amongst undergraduates in University of Calabar**

**Table 2 : Undergraduate Students' Knowledge of glaucoma**

Questions/ Response on glaucoma	Frequency (n = 243)
<b>Risk of glaucoma increases with age</b>	
Yes	168(69.1%)
No	43(17.7%)
Don't know	32(13.2%)
<b>Blindness from glaucoma can be prevented</b>	
Yes	198(81.5%)
No	24(9.9%)
Don't know	21(8.6%)
<b>Anyone can have glaucoma</b>	
Yes	188(77.4%)
No	33(13.6%)
Don't know	22(9.0%)
<b>Treatment of glaucoma is possible</b>	
Yes	194(79.8%)
No	24(9.9%)
Don't know	25(10.3%)
<b>Vision is affected in the early stages</b>	
Yes	106(43.6%)
No	102(42.0%)
Don't know	35(14.4%)
<b>It has familial predisposition (hereditary)</b>	
Yes	165(67.9%)
No	46(18.9%)
Don't know	32(13.2%)
<b>Glaucoma has asymptomatic cause</b>	
Yes	118(48.6%)
No	54(22.2%)
Don't know	71(29.2%)
<b>Glaucoma is same as cataract</b>	
Yes	43(17.7%)
No	141(58.0%)
Don't know	59(24.3%)
<b>Glaucoma results from</b>	
Mature cataract	24(9.9%)
Progressive increase in lenses prescriptions	3(1.2%)
Pressure damage to nerve vision	127(52.3%)
Do not know	89(36.6%)
<b>Consequence of untreated glaucoma</b>	
Slow, irreversible loss of vision	201(82.7%)
Eyes cannot be operated	20(8.23%)
Do not know	22(9.1%)

*Data presented as frequencies and percent*

**Table 3: Relationship between knowledge level of glaucoma and age group of students**

Age group (in years)	Knowledge level			Total
	Poor (%)	Moderate (%)	Good (%)	
15 - 24	129 (47.4)	67 (24.6)	76 (27.9)	272 (100.0)
25 - 34	47 (39.2)	32 (26.7)	41 (34.2)	120 (100.0)
35 - 44	2 (40.0)	2 (40.0)	1 (20.0)	5 (100.0)
45 - 54	2 (66.7)	0 (0.0)	1 (33.3)	3 (100.0)
Total	180 (45.0)	101 (25.2)	119 (29.8)	400 (100.0)

*Data presented as frequencies and percent;  $\chi^2 = 4.188$ ,  $df = 6$ ,  $p$ -value = 0.651*

**Table 4 Relationship between knowledge level of Glaucoma and gender of Respondents**

Gender	Knowledge level			Total
	Poor (%)	Moderate (%)	Good (%)	
Male	78 (44.8)	45 (25.9)	51 (29.3)	174 (100.0)
Female	102(45.1)	56 (24.8)	68 (30.1)	226 (100.0)
Total	180(45.0)	101 (25.2)	119 (29.8)	400 (100.0)

*Data presented as frequencies and percent;  $Df = 2$ ,  $p$ -value = 0.967*

**Table 5 Relationship between knowledge level of glaucoma and faculty of study of respondents**

Faculty	Knowledge level			Total
	Poor (%)	Moderate (%)	Good (%)	
Social Sciences	55(41.0)	48 (35.8)	31 (23.1)	134 (100.0)
Law	27(57.4)	10 (21.3)	10 (21.3)	47 (100.0)
Basic Medical Sciences	37(52.9)	11 (15.7)	22 (31.4)	70 (100.0)
Allied Medical Sciences	34(35.4)	20 (20.8)	42 (43.8)	96 (100.0)
Medicine and Surgery	27(50.9)	12 (22.6)	14 (26.4)	53 (100.0)
Total	180(45.0)	101 (25.2)	119(29.8)	400 (100.0)

*Data presented as frequencies and percent;  $\chi^2 = 24.744$ ,  $Df = 8$ ,  $p$ -value = 0.002\**

significant ( $\chi^2 = 4.188$ ,  $p = 0.651$ ) (Table 3). More females (30.1%) than males (29.3%) had a good knowledge of glaucoma. Analysis of this result using chi-square test statistics showed no statistically significant difference between the knowledge level of the males and females ( $\chi^2 = 0.068$ ,  $p$ -value 0.967) (Table 4). The relationship between the faculties of study of undergraduates of UNICAL and their glaucoma knowledge level was tested using chi-square test statistics and the result showed a significant relationship between the faculties of undergraduates and their level of glaucoma knowledge ( $\chi^2 = 24.744$ ;  $p$ -value=0.002) (Table 5).

## DISCUSSION

The result for glaucoma awareness and knowledge as shown in Figure 3 is in agreement with results of a study carried out amongst hospital workers in

University of Benin Teaching Hospital, where 74.3% were aware of glaucoma, while knowledge of glaucoma was good among 31% of those who were aware of glaucoma. (Osaguona *et al.* 2014). In a similar study by Kizor-Akaraiwe, Monye & Okeke (2017), carried out in an urban settlement in Enugu metropolis, 65.5% were aware of glaucoma while 36.8% had good knowledge of glaucoma.

The three studies mentioned above have similarities the levels of awareness of Glaucoma were similar. This could be as a result of the relatively educated study settings (undergraduates, hospital workers and urban settlers respectively). However, it was observed that though our study has almost same level of awareness with those in Enugu urban center (66.25 % and 65.5% respectively), the later reported a higher proportion of respondents with

## Undergraduates knowledge levels of glaucoma

Pius *et al.*,

good knowledge 36.8% as against 29.6% recorded in our study. This reveals the fact that being University students does not directly impact them with knowledge of glaucoma, or other diseases.

Knowledge levels of glaucoma with respect to faculties of studies in University of Calabar were significant. This is an extension to what has been done by previous studies. "Among the educated, the awareness increased exponentially. It was more significant in people educated above college level." (Sathyamangalam *et al.*, 2009; Krishnaiah *et al.* (2005), Tenkir *et al.*, (2010). From our study, a majority (72.9%) of students in the Faculty of Allied and Medical Sciences have heard of glaucoma, while 43.8% of those who are aware had good knowledge of glaucoma. They had the highest levels of knowledge of glaucoma compared to other faculties. This may be as a result of some courses on chronic diseases including eye diseases studied by some of the students in this faculty especially Public Health students, unlike those in medicine that start clinicals only from their 4<sup>th</sup> year.

The source of knowledge of Glaucoma is important in directing proper awareness campaign. This study reported multiple sources of knowledge, though a large proportion of respondents (34.3%) got their knowledge from hospital sources- personnel and eye camps, mass media contributed 25.3% to glaucoma knowledge. This is in tandem with Alemu *et al.* (2017), who reported highest source of knowledge from mass media in a study carried out in Northwest Ethiopia. In our present-day society where technology is a means to achieving every cause, it is expected that people, especially young ones like the undergraduates of UNICAL, should gain knowledge from mass media. This was not the situation with our study population hence a challenge to eye health care providers, public health practitioners and all stakeholders to embark on mass media awareness campaign. The social media platforms can be a veritable tool to achieving proper health care education and promotion .

## CONCLUSION

The findings of our study shed light on the level of

awareness and knowledge about glaucoma and its association with faculty of study among undergraduates. The level of awareness of glaucoma was fair but the level of knowledge of the disease was poor. Knowledge about glaucoma can lead to early detection, which is a very important step in preventing glaucoma-related blindness. There is a need to identify intervention strategies with emphasis on methods and content that can influence the knowledge of sight threatening diseases like glaucoma amongst young population.

## COMPETING INTERESTS

The authors declare that they have no competing interests.

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## Undergraduates knowledge levels of glaucoma

Pius *et al.*,

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